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09/166,343

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C STUART JOHNSON

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05/19/2004

ALCATEL INTERNETWORKING, INC.  
ALCATEL-INTELLECTUAL PROPERTY DEPARTMENT  
3400 W. PLANO PARKWAY, MS LEGL2  
PLANO, TX 75075

EXAMINER

ABELSON, RONALD B

ART UNIT	PAPER NUMBER
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2666

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/166,343

Applicant(s)

JOHNSON ET AL.

Examiner

Ronald Abelson

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 2 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 13,14,16,18-20 and 22-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28 and 29 is/are allowed.
- 6) ☒ Claim(s) 13,14,16,18-20,22, 24, 25,30-32,34-39,41-43,45 and 46 is/are rejected.
- 7) ☐ Claim(s) 23,26,27,33,40 and 44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 22 and 24 rejected under 35 U.S.C. 102(e) as being anticipated by Larsson (US 6,128,295).

Regarding claim 22, Larsson teaches storing in a first stage queue a pointer (fig. 3 box 124) to memory storing a data packet (fig. 3 box 92) and a list of destination ports (fig. 3 box 114, physical link, col. 6 lines 38-41).

The system comprises identifying a destination port stored in the first stage queue (fig. 3 box 114, physical link, col. 6 lines 38-41).

The system comprises retrieving the pointer to memory stored in the first stage queue and storing in a second stage queue associated with the identified destination port the

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retrieved pointer to memory (fig. 3 box 124, 130c, fig. 5, col. 9 lines 21-39).

The system comprises using the pointer to memory in the second stage queue to complete the communication of the data packet from the sending port to the identified destination port (fig. 3 see connection from box 130c to box 92, fig. 5, col. 9 lines 21-39).

Regarding claim 24, the second stage queue includes multiple second queues (fig. 3 box 114), and the step of storing the retrieved pointer to memory in the second stage queue comprises storing the retrieved pointer in a specific second queue based on a characteristic of the packet (delay priority, col. 6 lines 41-44).

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 13, 14, 16, 18-20, 25, 27, 30-32, 34-39, 41-43, and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebb (US 6,320,864) in view of Caldara (US 5,978,359).

Regarding claims 13, 25, 30, 31, 36, 39, Hebb teaches a switching device, apparatus for communicating data packets from sending ports to destination ports (fig. 1).

The system comprises a first stage queue comprising a plurality of first queues (fig. 1 box 18) for storing packet-related data (internal cell header, col. 4 lines 54-56) from a sending port (fig. 1 element 26), wherein the packet-related data is stored in the plurality of first queues based on a characteristic of the data packets (fig. 1 box 14, fig. 3 100a-

d, col. 5 lines 29-33). The examiner corresponds fig. 1 box 18 with fig. 3 box 100a-d).

The system comprises a second stage queue (fig. 1 box Buffer A,B) associated with each of a set of destination ports (fig. 1 element 24a) storing the packet-related data from the first stage queue (VPI/VCI addresses, col. 5 lines 9-13) based on a characteristic of the data packets (fig. 4A, box 202, multicast, unicast, col. 8 line 54 - col. 9 line 12). Note, regarding storage based upon a characteristic of the data packets, in the passage provided, the packet is stored in a queue dependent upon whether the packet is multicast or unicast.

Regarding claims 18, 30, 31, a plurality of second queues (fig. 1 Buffer A,B).

Regarding claims 31 and 32, a first characteristic of the data packet (fig. 3 box 100a-d, priority, col. 5 lines 29-33) and a second characteristic (VPI/VCI addresses, col. 5 lines 9-13).

Regarding claims 13, 25, 30, 31, 36, 39, ~~a~~ Although Hebb teaches a switch fabric (fig. 1 box 16), the reference is silent on a switch fabric coupled to the second stage queue, the switch

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fabric using the packet-related data in the second stage queue for transmitting the data packets to a destination port.

Caldera teaches a switch fabric (fig. 2 box 29) coupled to the second stage queue (fig. 2 see queue pointed to by queue element 28).

Regarding the limitation, the switch fabric using the packet-related data in the second stage queue for transmitting the data packets to a destination port, both Hebb and Caldera teach ATM networks (Hebb: col. 1 17-19, Caldera: col. 1 lines 15-16). As shown by Hebb, the appropriate destination ports are determined based upon the VPI/VCI addresses stored in the cell header (col. 1 lines 21-25).

Therefore it would have been obvious to one of ordinary skill in the art, having both Hebb and Caldera before him/her and with the teachings [a] as shown by Hebb, a switching device, apparatus for communicating data packets from sending ports to destination ports, and [b] as shown by Caldera, a multistage switching fabric wherein the input to a switch is a plurality of second stage queues, to be motivated to modify the system of Hebb by attaching a second stage switching fabric to communication links (fig. 1 elements 24a-n). This would improve the system by enabling the design of a multistage switch.

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Regarding claim 14, means for determining from the packet-related data which destination ports are to receive the packet-related data in the first stage queue (Hebb: linked list of offsets, VPI/VCI addresses, col. 5 lines 9-13).

Regarding claim 16 and 38, address resolution logic (Hebb: linked list of offsets, VPI/VCI addresses, col. 5 lines 9-13).

Regarding claim 18, the packet-related data stored in the second queue based on the characteristics of the data packets (Hebb: VPI/VCI addresses, col. 5 lines 9-13).

Regarding claim 19, switch fabric is a shared memory (Hebb: fig. 2, see tables 42, 40, 52, col. 6 lines 60-65).

Regarding claim 20, the switch fabric is a crossbar matrix (Hebb: fig. 1 box 16).

Regarding claim 27, the switch is a crossbar switch fabric (Hebb: fig. 1 box 16), and transmitting comprises using the packet-related data to form connections in the matrix (VPI/VCI, col. 4 lines 31-35) so as to communicate simultaneously a copy



of the data packets from the sending port to each of the determined destination ports (col. 2 lines 17 - 21).

Regarding claims 34 and 45, the examiner corresponds the applicant's type of service with the priority of Hebb (fig. 3 box 100a-d, priority, col. 5 lines 29-33).

Regarding claim 35, the examiner corresponds the applicant's destination port number with the VPI/VCI address of Hebb (VPI/VCI addresses, col. 5 lines 9-13).

Regarding claim 37, the dimension of the first array is the same as the dimension of each of the plurality of second arrays (Hebb: col. 4 lines 16-23). Note, the reference states a greater number of Output Cell Buffers may be employed within each output port A, therefore, the examiner maintains the first array may be the same as the dimension of each of the plurality of second arrays.

Regarding claim 41, the packet related data is a data packet (Hebb: internal header and associated cell, col. 4 lines 53-56).

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Regarding claim 42, the first stage queue comprises a plurality of first queues (Hebb: fig. 1 box 18) and the step of storing the packet-related data in one of the plurality of first queues based on the characteristic of each of the packets (Hebb: priority, col. 5 lines 29-33).

Regarding claim 43, the packet related data characteristic is priority (Hebb: priority, col. 5 lines 29-33).

Regarding claim 46, the packet characteristic is a packet type comprising a unicast and multicast type (Hebb: MID prepended, CID prepended, col. 8 line 56 - col. 9 line 6).

***Allowable Subject Matter***

3. Claims 28 and 29 allowed.
4. Claims 23, 26, 33, 40, 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

Regarding claims 28 and 29, although Hebb teaches storing in a first stage queue packet-related data from a sending port

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(fig. 1 box 18, col. 4 lines 53-56) nothing in the prior art of the record teaches or fairly suggests storing in the second stage queue the packet-related data from the first stage queue based on a network protocol type, as specified in claim 28; based on whether the data packets are unicast packets or multicast packets, as specified in claim 29. In contrast, instead of storing the packet related data from the first queue, Hebb teaches storing in the second stage queue a VCI/VPI address that is an offset from the cell header of the first queue (col. 5 lines 9-13).

Regarding claim 23, although Larsson teaches the first stage queue includes multiple first queues (fig. 3 box 124, 120, 122), nothing in the prior art of the record teaches or fairly suggests the step of storing the pointer to memory in the first stage queue comprises storing the pointer in a specific first queue based on a characteristic of the packet, in combination with all the other limitations listed in the claim.

Regarding claim 26, although Hebb teaches a shared-memory switch fabric, and transmitting copies of the data packets (spatial multicasting, col. 1 lines 36-42, col. 7 lines 23-27), and packet related data (VPI/VCI), none of the prior art of

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reference teaches or fairly suggests using the packet-related data to obtain a copy of the data packets from the shared memory.

Regarding claims 33, and 44, nothing in the prior art of the record teaches or fairly suggests the packet-related data being a network protocol type.

Regarding claim 40, although Hebb teaches a first stage queue (fig. 1 box 18), the reference teaches storing in a first stage queue the internal cell header and the associated cell are stored within one of queue (fig. 1 box 18, col. 4 lines 53 - 56), nothing in the prior art of the record teaches or fairly suggests storing a pointer to memory in the first queue.

#### ***Response to Arguments***

5. Applicant's arguments with respect to claim 13 (applicant: pg. 11) have been considered but are moot in view of the new ground(s) of rejection. The examiner agrees with the applicant that the prior office action did not teach all the limitations of amended independent claim 13. Therefore, a new search was

performed and the combination of Hebb and Caldera were found to teach all the limitations of the claim.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (703) 306-5622. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (703) 308-5463. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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*RA*  
Ronald Abelson  
Examiner  
Art Unit 2666

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*Seema S. Rao*  
**SEEMA S. RAO** *5/14/04*  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600